National Aeronautics and Space Administration

Phase II Extended (II-E) – Enabling Continued Development and Transitions

NASA SBIR/STTR Program Post Phase II Team

June 22, 2022

NASA SBIR/STTR Program

sbir.nasa.gov

Please Note

The following slides were shared via live webinar on June 22nd, 2022. If reviewing these slides after this date, please refer to sbir.nasa.gov for the most up-to-date information regarding funding vehicles, funding amounts, application requirements, due dates, and other information pertaining to the Phase II Extended (II-E) option in particular and the NASA SBIR/STTR program in general.

AGENDA

- Summary Of Phase II-E
- Pre-II-E Education and Preparation Assistance
- Understanding NASA
- Finding/Approaching II-E Investors
- Key Takeaways

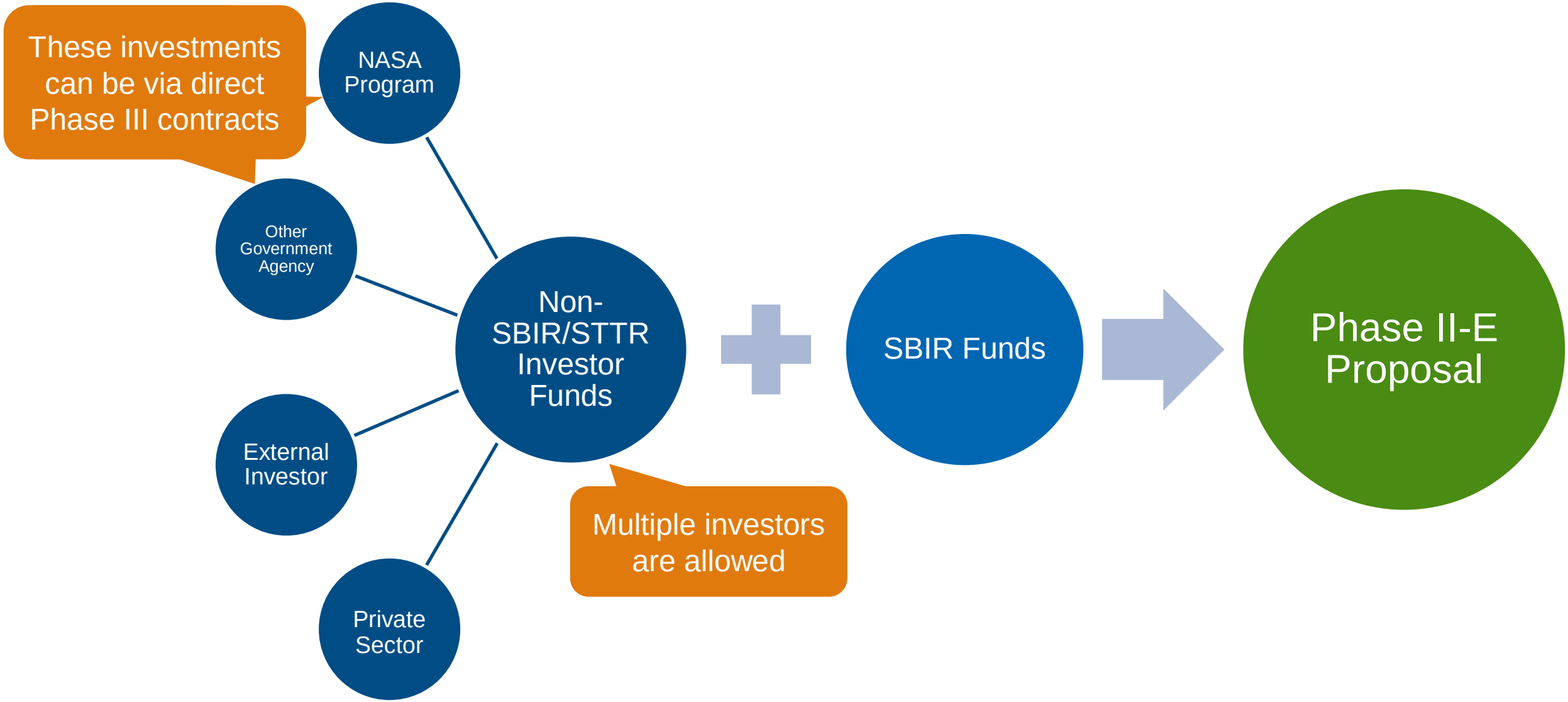
Summary Of Phase II-E

Phase II Extended (II-E)

- **Purpose:** Encourage the advancement of innovations developed under Phase II via **an option** to further R/R&D efforts underway **on active Phase IIs**
- **Eligibility:** II-E funding is available for **Phase II awardees only**
- **Benefit to Firms:** Continued development
- **Benefit to Investors:** Matching funding for innovative R&D

*Note: Currently, II-E is a built-in contract option; future implementations may leverage other contracting mechanisms

II-E | External Funding Sources for Proposal



Phase II-E | Timeline and Funding

Timeline		
Applicable Period/Solicitation	Phase II-E Submission Period	Anticipated Period Of Additional Performance
2016 Solicitation and Onwards*	Starts after the 12th month of performance and ends 60 days before contract end date	6-12 Months
Funding		
Minimum Non-SBIR/STTR Funding Required	Corresponding SBIR/STTR Program Contribution	Maximum Cumulative Award (Phase II + Phase II-E Match)
$25,000	1:1 match to a maximum of $375,000	$1,125,000 (SBIR and STTR)

Note: Information accurate as of 06/22/2022; please monitor the NASA SBIR/STTR program website and communications for any changes

II-E | Application Requirements

- Application Guidelines & Requirements
  View detailed information on our website
  - Application Form
  - Letters of Commitment(s) from Investor(s)
  - Statement of Work (SOW)
  - Cost Proposal
  - Briefing Chart
  - Commercialization Plan
- Apply via Submissions Electronic Handbook (EHB)
  - See “Go To Submission” link in Contract under Phase II E/X

Program Website | sbir.nasa.gov

Award Search
Find our past portfolio of Phase II awards, including contact information

Viewing Open and Forthcoming Opportunities
See the various Post Phase II mechanisms, rules, and application requirements

II-E | Basics

- Funding associated with Phase II-E shall further the technology of the original SBIR Phase II contract; i.e., **advance the TRL value (Technology Readiness Value)**
- NASA is seeking **non-SBIR/STTR, third party validation** of the technology, and requires that the funds come from an **investor external to the SBIR/STTR program**
- Phase II-E proposals can have **more than one investor**
- A small business **cannot contribute its own internal funds** as part of the Phase II-E investment
- A **subcontractor will not qualify** as an external investor
- STTR: **Investments must be in the Small Business**, not the Research Institution
  - The Small Business *can* subcontract some of those funds to the Research Institution

II-E | Investments

- Funding **commitment** must be made prior to award; however, the **expenditure** must be concurrent with the Phase II-E period of performance
  - The investment must occur between the Phase II-E proposal submission date and 45 days after the company's notification of selection, without constraints
- **Purchases will not be considered an investment**, since a purchase may only represent a procurement need, not a desire to further the technology
- Matching contributions must be in funds, regardless of source; **in-kind contributions do not count**
- **Federal agency investors** (including NASA Mission Directorate and Program/Project):
  - Must pay for activities that further the development and/or commercialization of the company's SBIR/STTR technology beyond the Phase II work (e.g., R&D, manufacturing, etc.)
- **Non-federal agency investors:**
  - Must provide funding in return for such items as: equity, share of royalties, rights in the technology, percentage of profit, or any combination of the above
- See **Section 1.5** of the NASA SBIR/STTR public website for additional information and restrictions on investors (including family, shareholders, affiliates, etc.)

II-E | Exercising the Contract Option

- If selected, the firm will receive a **"Notice of Intent"** detailing the Government's intent to exercise the Phase II-E Option
- The firm must show **proof of funds** transferred from the investor to the firm **within a defined period of days** after receipt of notification that the Phase II-E proposal has been selected
- If **proof of receipt** of the investment funds is not received by NASA within the required timeframe, the Option for Phase II-E matching funds will expire
- If the NASA Shared Services Center (NSSC) Contracting Officer exercises the Option, it will be accomplished via a **Modification**
- The Modification will identify the Option **period of performance** and **contract amount**
- If an investment is from a **government agency** (including NASA), those funds also need to be transferred to the firm and will be in a **funding vehicle separate from the Phase II contract**
  - This can be done via a separate **Phase III contract** or a **Modification/new task** on another existing non-SBIR/STTR government contract

Pre-II-E Education and Preparation Assistance

Where and When to Start

- **I-Corps** | Customer discovery to enable small businesses, including start-up firms, to increase the odds of accelerating SBIR/STTR technology development into a repeatable and scalable business mode
- **TABA** | Technical and Business Assistance, to assist in commercializing the innovation
- **Phase II Proposal Formulation** | Technical developments and demonstrations to enable investments

NASA I-Corps Training Program

- The NASA SBIR/STTR program partners with the National Science Foundation (NSF) to offer selected NASA SBIR/STTR teams the opportunity to participate in the I-Corps program
  - The NASA I-Corps Program was initiated in 2017 and was offered to SBIR/STTR Phase I Awardees
  - The NSF I-Corps Program provides I-Corps training with certified I-Corps instructors
- Purpose: Accelerate the development of a **scalable business model**
  - Develop business model hypotheses using the Business Model Canvas
  - Test those hypotheses through the Customer Development Interview process
- The intended result will be firms developing:
  - A better understanding of the **needs of their customer base**
  - Their **value proposition** as it relates to those customer needs
  - An outline of a **business plan** for moving forward

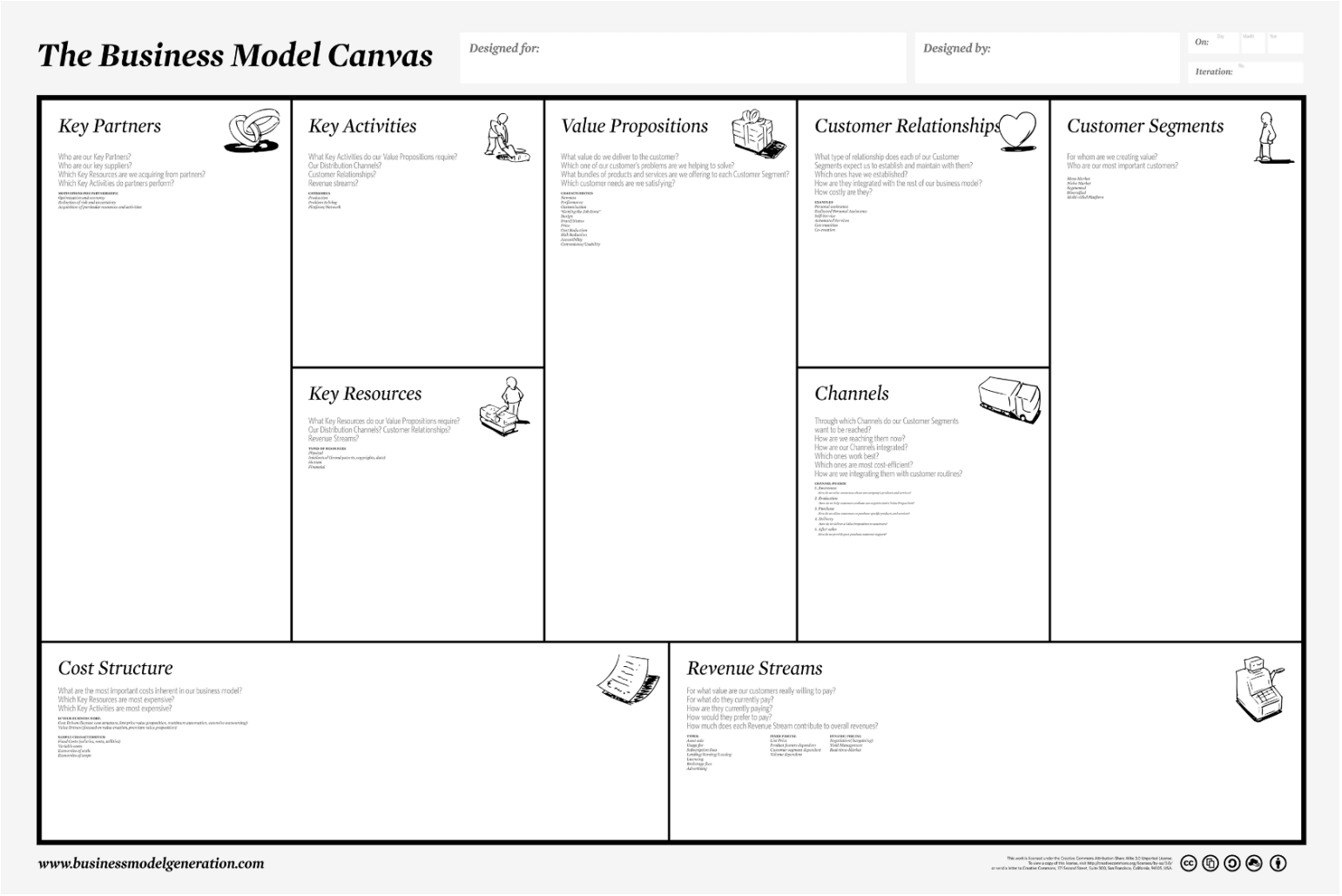
Pertinent to II-E, this may help in Phase II proposal formulation to direct development toward customer needs and appropriate gates/demonstrations that will enable future funding, development, sales, and use

NASA I-Corps | Versions and Funding

- NASA offers **two versions of I-Corps** training:
  - Boot Camp Program (SBIR)
  - National I-Corps Program (STTR)
- **NASA will fund the I-Corps training** via a new Modification to either the SBIR/STTR Phase I contract, SBIR/STTR Phase II contract, or CCRPP contract:
  - Up to **$10,000** for each I-Corps Boot Camp team
  - Up to **$25,000** for each National I-Corps Program team
- In 2021, NASA launched the **Post Phase II I-Corps Program**
  - Participation is limited to firms that have executed a FY2021 or FY2022 Modification for the SBIR/STTR Phase II contract or executed a FY2021 or FY2022 contract for CCRPP

NASA I-Corps | Business Model Canvas

- Provides the framework that guides the I-Corps learning
- Includes value propositions, customer segments and pain points, demand creation, channel development, revenue model and streams, partnership strategy, and resource requirements



NASA I-Corps | Format and Requirements

- Each firm will form a three-person team consisting of Entrepreneurial Lead, Technical Lead, and Industry Mentor
- Training includes textbook reading, videos, seminars conducted by certified I-Corps instructors, office hours with the instructors, customer discovery interviews, and more
- During the National I-Corps Program course, each participating team, including all its team members, will be required to:
  - Attend an in-person evening reception and three-day kickoff Entrepreneurial Immersion course (location and date to be announced)
  - Conduct approximately 100 customer interviews over the seven-week program and submit interview summary reports. This process of customer discovery "outside the building" is expected to require a minimum of 15 hours per week per each I-Corps team member for at least five weeks.
  - Participate in five weekly webinar sessions and submit regular updates to the team's business model canvas. It is expected that I-Corps teams will also take advantage of instructor office hours.
  - Attend, in person, the final two-day course closeout/lessons learned session (to be held in the same region as the kickoff course).

Technical and Business Assistance (TABA)

- History suggests that at Phase I, most small businesses are **hyper focused on research and development** due to the short period of performance (6 mo. SBIR; 13 mo. STTR)

- TABA provides an opportunity for the small business to stay focused on R&D while utilizing a vendor(s) to help shape their **commercialization roadmap** in order to:
  1. **Strengthen their ability to apply** for future Phase II and Post Phase II/Phase III opportunities
  2. Put into place strategies to **move beyond SBIR/STTR** for commercialization in both federal and NASA relevant commercial markets

- TABA allows the small business to select **one or multiple vendors** to help develop a plan to address the following:
  - Product Sales, IP Protections, Market Research, Market Validation, and Development of Regulatory Plans and Manufacturing Plans

- TABA Amounts
  - Phase I: an amount up to and not more than **$6,500 per year**
  - Phase II: an amount up to and not more than **$50,000 per project**

Pertinent to II-E, this may inform whom to approach for potential matched funding and their needs and technology use implications

Technical and Business Assistance (TABA)

- Small businesses may:
  - Request TABA funding up to $6,500 in their Phase I proposal
    - **It is not required and it will not be considered as part of the technical evaluation**
    - Request must include a description of how the funding will be used and must go to a third party vendor
    - Funding would be provided as a supplement to the Phase I award, if selected
  - Choose their own TABA vendor(s)
    - NASA reserves the right to withhold funds requested for TABA until a formal review and approval of the requested vendor(s) is completed. Remember the awardee cannot be a vendor.
- NASA encourages using Phase I TABA funds for:
  - **Development of a Phase II TABA Needs Assessment**
    - The goal of the TABA Needs Assessment is to determine and define the types of TABA services and costs the offeror would need if TABA is requested at Phase II and the project is selected. This assessment will be submitted with the Phase II proposal. If awarded, a Phase II can be eligible to receive up to $50,000 for TABA services.
  - **Development of a Phase II Commercialization and Business Plan**
    - Phase II proposals require a commercialization and business plan so that NASA can evaluate a firm's ability to commercialize the innovation and to provide a level of confidence regarding the firm's future and financial viability.

Pertinent to II-E, this may not only inform on potential investors and yield a stronger business plan, but also help justify the technical development plan and establish enabling "gates" for future funding

Phase II Proposal Formulation

- Many applications are submitted at or near **the end of the II-E eligibility period** and/or many firms have expressed **challenges getting timely commitments** with respect to their Phase II progress

- One recommendation is to put together a Phase II work plan that addresses **at the outset** factors necessary for stakeholder buy-in in a timely manner; these may include but are not limited to:
  - Developmental milestones with **key performance parameters/targets**
  - Key (early) demonstrations that stakeholders consider **critical "gates"** (potentially in pertinent environments)
  - **Risk reduction** activities
  - **TRL advancement**

- For NASA investments: While blackout restrictions exist during Phase II proposal development and NASA personnel cannot write or pre-review Phase II proposals, **you are encouraged to communicate** regarding general NASA needs, utilization, infusion, and commercialization, including technology infusion planning and facilitation of SBIR/STTR technology commercialization
  - This may entail general expected notional gates/milestones/activities that NASA programs/projects would typically expect as entry criteria required for notional future funding
  - This will not reflect firm obligations for future funding; we encourage you to follow up with stakeholders during execution to discuss progress and if funding may be possible under the current circumstances

Understanding NASA

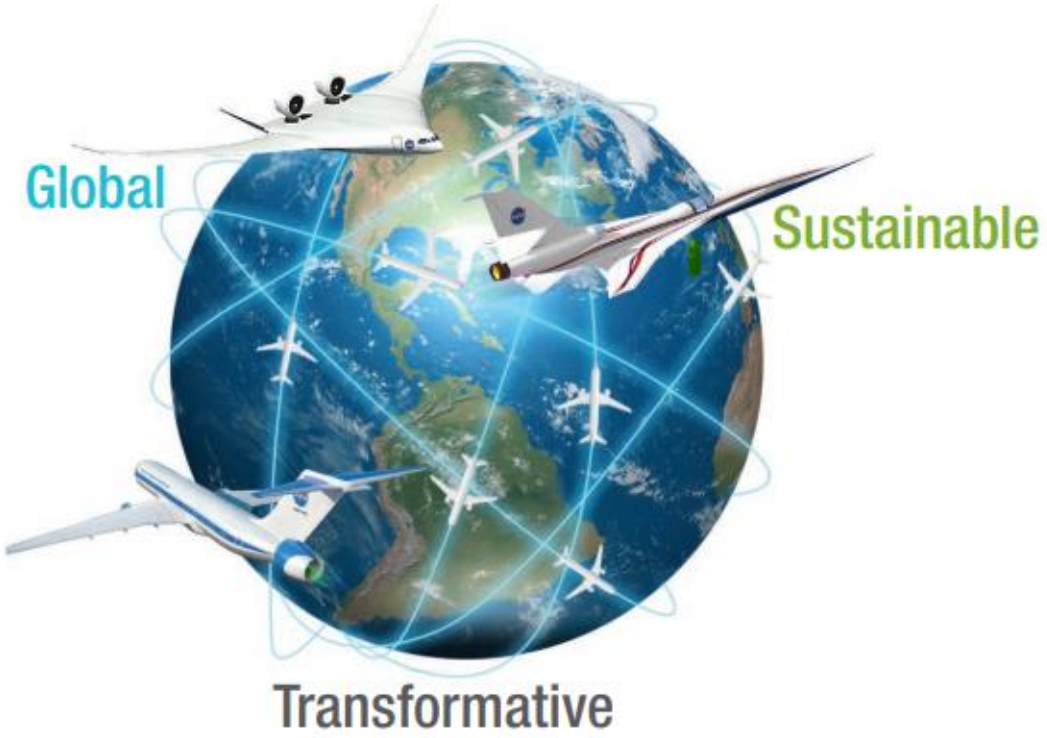
Understanding NASA | Mission Directorates

- Our recent solicitations have contained **four Mission Directorate** category areas, with **STTR** as a separate category/solicitation
- STTR is not a Mission Directorate on its own, but is a program separate from SBIR
  - Due to various reasons (budget, scope, typical TRL status, etc.), NASA has subtopics in STTR that are not specifically mapped to Mission Directorates via the numerical identifier (TX.XX)
  - However, note that STTR subtopics may support one or multiple Mission Directorate needs; please refer to the text of the subtopic
- Recently, NASA has transitioned from four Mission Directorates to **five Mission Directorates**; the Human Exploration and Operations Mission Directorate (HEOMD) is being separated into:
  - Exploration Systems Development Mission Directorate (ESDMD)
  - Space Operations Mission Directorate (SOMD)
- Recent solicitations have not captured this change yet; this may be an eventual transition for future SBIR solicitations

Understanding NASA | Mission Directorates

SBIR Identifier	Mission Directorate		Purpose
A	Aeronautics Research Mission Directorate (ARMD)		Transforming aviation to make it more sustainable and more accessible
Z	Space Technology Mission Directorate (STMD)		Develops transformative space technologies to enable future missions
H	Human Exploration and Operations Mission Directorate (HEOMD)	Exploration Systems Development Mission Directorate (ESDMD)	Defines and manages systems development for programs critical to NASA's Artemis program and planning for NASA's Moon to Mars exploration
		Space Operations Mission Directorate (SOMD)	Enabling sustained human exploration missions and operations in our solar system
S	Science Mission Directorate (SMD)		Use the vantage point of space to achieve a deep scientific understanding of our planet, other planets and solar system bodies, the interplanetary environment, the Sun and its effects on the solar system, and the universe beyond

Aeronautics Research Mission Directorate



6 Strategic Thrusts

1: Safe, Efficient Growth in Global Operations

2: Innovation in Commercial Supersonic Aircraft

3: Ultra-Efficient Subsonic Transport

4: Safe, Quiet, and Affordable Vertical Lift Air Vehicles

5: In-Time System-Wide Safety Assurance

6: Assured Autonomy for Aviation Transformation

Space Technology Mission Directorate

Early Stage Innovation and Partnerships

- Early Stage Innovation
  - Space Tech Research Grants
  - Center Innovation Fund
  - Early Career Initiative
  - Prizes, Challenges, and Crowdsourcing
  - NASA Innovative Advanced Concepts (NIAC)
- Technology Transfer

SBIR/STTR Program

- Small Business Innovation Research
- Small Business Technology Transfer

Technology Maturation

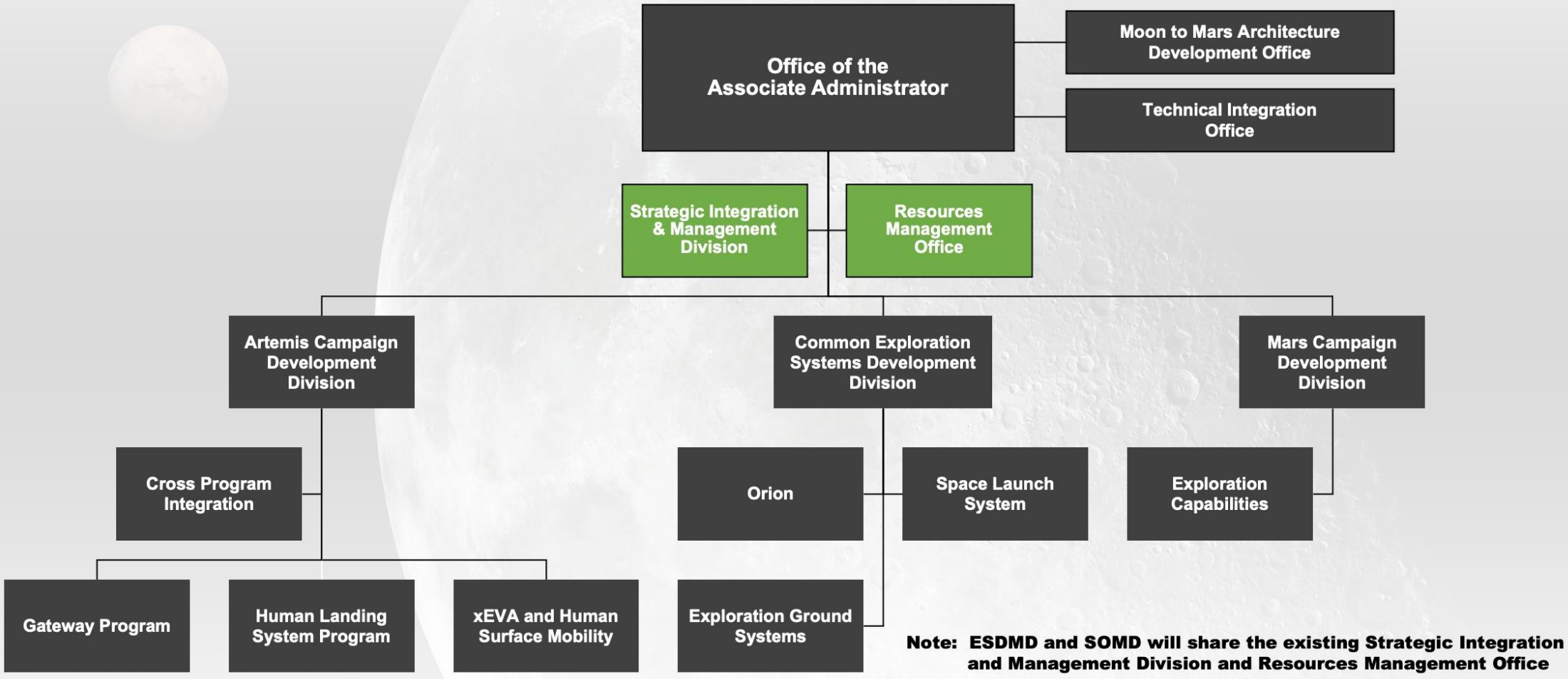
- Game Changing Development
- Lunar Surface Innovation Initiative

Technology Demonstration

- Technology Demonstration Missions
- Small Spacecraft Technology
- Flight Opportunities

Technology Readiness Level

Exploration Systems Development Mission Directorate



Space Operations Mission Directorate

Note: ESDMD and SOMD will share the existing Strategic Integration and Management Division and Resources Management Office

Science Mission Directorate

Understanding NASA | Mission Directorates

- Other funding opportunities and competitions are generally posted on:
  - **NSPIRES:** https://nspires.nasaprs.com/external/
  - **SAM.gov:** https://sam.gov/content/home
  - **NASA Solve:** https://www.nasa.gov/solve/index.html
- Each Mission Directorate may have a specific landing page also listing their current calls (which then may refer you to the pertinent portal):
  - **ARMD:** https://www.nasa.gov/aeroresearch/solicitations
  - **STMD:** https://www.nasa.gov/directorates/spacetech/solicitations
  - **SMD:** https://science.nasa.gov/researchers/sara/grant-solicitations
  - **HEOMD/ESDMD/SOMD:** At the time of this presentation, due to the reorganization, specific landing pages do not exist. However, please refer to webpages for the specific offices, programs, and divisions—as well as the above general links—for opportunities to be announced.

Finding/Approaching II-E Investors

NASA Investment Logistics

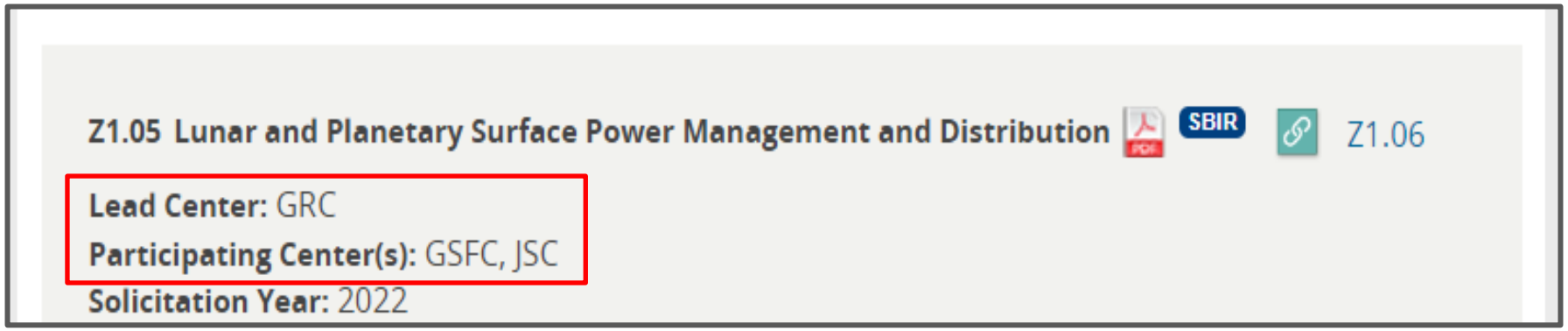
- **Funding Opportunities**
  - Many firms use Phase III funds as their matching funds
  - NASA also has many competitive solicitations for development and/or procurement at different levels, including technology/component, system, vehicle/asset, whole missions, or commercial services
    - Some of these may have certain lead, principal investigator, teaming, NASA, and/or external/commercial requirements
    - Note that NASA also partners with other government agencies and other nations for certain missions
- **Documentation**
  - While the TM/COR can see contract details such as your II-E application period and your prior deliverables/proposal/reports, others in NASA will *not* have direct access

Engaging with NASA | TM/COR

- **TM/COR**
  - Your TM/COR may have direct perspectives from the projects, programs, and centers they support
  - However, they may not be funding authorities themselves
  - We suggest you ask your TM/COR to extend invitations to reviews/discussions to other subject matter experts and project/program personnel

Engaging with NASA | Centers

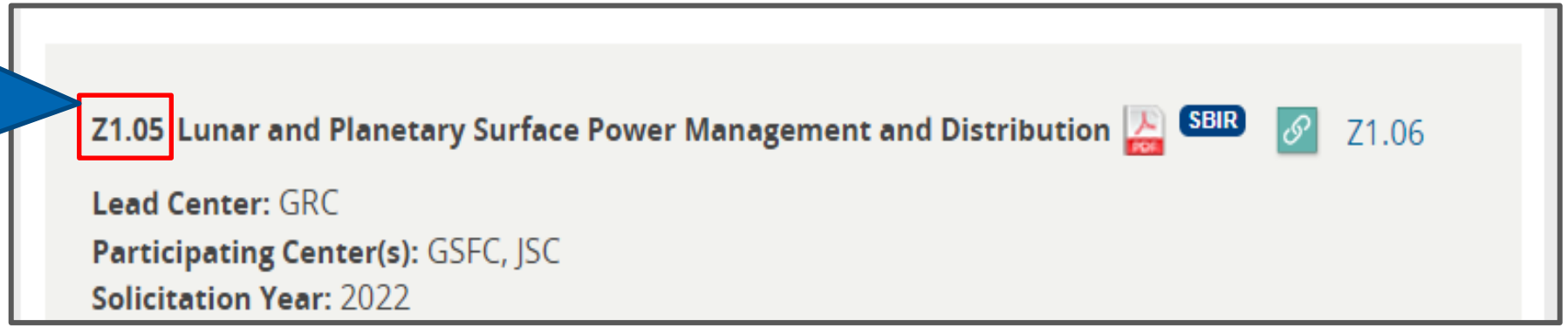
- **Centers**
  - The solicitations indicate lead and participating centers for each subtopic
  - While your TM/COR may have contacts at their own and other centers, we encourage you to reach out to those pertinent centers via the SBIR/STTR Center Technology Transition Leads (CTTLs) for each: https://sbir.nasa.gov/contacts
  - Note that these may be the primary stakeholders for your technology at the current TRL, but later stage development efforts and/or cross-cutting applications may have applicability to other centers; we encourage you to discuss this with your contacts as you continue to develop the technology



Engaging with NASA | Mission Directorates

- **Mission Directorates (and projects/programs)**
  - Likewise, your subtopic was originally in a Mission Directorate (or may have given an indication of applicability if STTR). Mission Directorate Liaisons are also listed on the NASA SBIR/STTR Contacts page: https://sbir.nasa.gov/contacts
  - Explicit projects or programs may have been cited in the subtopic description
  - The SBIR/STTR program attempts to minimize duplication in our solicitations; engage with your contacts to explore if there may be cross-cutting Mission Directorate, program, and/or project implications

A = ARMD
H = HEOMD
S = SMD
Z = STMD



Engaging with NASA | Additional Stakeholders

- **References**
  - Many subtopics in the solicitations also include various reference documents, which may also provide an indication of program, project, and personnel contacts to explore
  - Public NASA publications are all hosted on the NASA Technical Reports Server (NTRS): https://ntrs.nasa.gov/
    - This is not only a way of researching other NASA stakeholders and subject matter experts in your area, but my also provide an indication of the development pathway and planned use for similar technologies

Engaging with NASA | Flight Opportunities

- **Flight Opportunities Program | SBIR/STTR Unique Post Phase II Offer – Suborbital**
  - https://www.nasa.gov/directorates/spacetech/flightopportunities/opportunities/sbir-sttr-post-phase2
  - NASA's Flight Opportunities program is interested in being an “external investor” for SBIR/STTR Post Phase II activities that need **suborbital flight testing**. Funds can be used to purchase services from any viable U.S. commercial flight vendor that best meets the project’s needs. (These companies have already flown Flight Opportunities-supported payloads.)
  - In order to receive an investment commitment letter from Flight Opportunities, a company must provide a proposed plan for a suborbital test flight that will clearly advance the readiness of the technology. The company must also demonstrate that further development and/or commercialization of the technology will have a potential impact on space exploration or the expansion of space commerce.

Engaging with External Investors

- While NASA cannot mandate or recommend specific external partnerships, we encourage you to discuss with NASA POCs, and explore on your own, pertinent:
  - Technical Communities/Committees
  - Conferences/Venues/Organizations/Forums
  - Other ongoing activities within the Mission Directorate and who public awardees of those efforts are
    - Some NASA efforts have multiple phases, so you may be able to identify/engage with the person leading an early phase and work toward an injection point at a later phase
  - Historical awardees of similar projects/missions
  - Other procurements
    - Specifically, large procurements typically have industry days and may have interested party lists; we would encourage you to attend/be included
  - Other government agency stakeholders
- Note that while some public SBIR/STTR records exist on sbir.nasa.gov and Techport (firm identifiers, abstract, etc.), NASA cannot share your deliverable reports externally

Recommendations for How to Engage

- **Early**
  - If you understand what technical milestones stakeholders will need to see in order to provide a commitment, you can plan accordingly in your Phase II proposal
  - Understand that NASA and other stakeholders need adequate planning time and may be operating within fiscal year and their own award timing constraints
- **Phase III Ability**
  - For government stakeholders, make them aware that this is an SBIR award, so they can fund you via a Phase III
  - Not all government stakeholders are aware of Phase III flexibilities and processes, so encourage them to reach out to their pertinent SBIR/STTR and/or procurement offices
- **Multiple Investors**
  - Currently, the NASA SBIR/STTR program allows for multiple investors for II-E, and will match the sum-total of that investment in a 1:1 ratio to the upper limit
  - Not only can this help you propose up to (or beyond) our upper limit, but it may also encourage investments, as investors may be getting more than a 1:1 benefit if multiple investors are involved. And potential investors may be interested to know of other vested interest if you are allowed to share that information.

Key Takeaways

Key Takeaways

1. **Leverage other programs/assistance for early preparation**
   - I-Corps, TABA, local/regional assistance
2. **Understand stakeholders at the Phase I stage**
   - Internal and external (other government agencies, industries, and investor types)
3. **Engage with stakeholders early**
   - Understand needs, timing, decisional/budget gates, technical requirements, development and procurement approaches (direct, teaming needs, commercial/supplier/contractor buys, etc.)
4. **Plan Phase II timing and milestones to enable investments and transitions**
   - Key performance parameters, appropriate demonstrations, risk reduction activities, system/integration/manufacturing considerations, etc.
5. **Follow through**
   - Keep stakeholders apprised of progress/status; involve in reviews/briefings, if able
   - Make sure stakeholders are aware of your timing (contract, II-E window) and Phase III abilities
6. **Repeat!**
   - Plan II-E and/or Phase III efforts to support/enable future transitions with not only your specific investor/stakeholder but others

Questions?

Visit our website:

www.sbir.nasa.gov

https://sbir.nasa.gov/content/post-phase-ii-initiatives